

# Discus™ DRG A226G



Combining an ADSL2+ WAN interface with a wide choice of LAN interfaces (Wi-Fi, FXS, FXO, USB, and ETH) the DRG A226G offers an integrated feature-rich platform for the distribution of your triple/quad-play services.

The Discus™ DRG A226G is an advanced Residential Gateway that provides the most comprehensive set of interfaces and features to address the needs of bundled, triple-play and converged services. Thanks to its advanced networking and QoS capabilities, the Discus™ DRG A226G supports a wide range of applications such as wired/wireless data, VoIP, dualmode/ fixed-mobile convergence, IPTV, shared storage, and printing through a USB port. DRG A226G features a high performance WiFi interface.

While based on the prevalent industry standards applicable for networking, voice protocols, and hardware interfaces, Discus™ DRG A226G software can be customized by Pirelli to suit your specific functional and service requirements.

- ADSL 2/2+
- Annex A/B
- 4 Ethernet 10/100 Base-T
- USB 2.0 host
- 2 FXS ports
- FXO port
- IP QoS
- Wireless 802.11 b/g

Discus™ DRG A226G fully complies with the DSL Forum TR-069 protocol which permits remote management. The DRG Gateways family can seamlessly integrate within Pirelli's technology bundle for quadruple play services, which comprises:

- Pirelli's H.264 HDTV Set Top Boxes
- Pirelli's DEX W/P Extenders for video home networking
- Pirelli's SIP GSM / WLAN Dual Mode Phones
- Pirelli's Remote Management Platform (PMP), which includes ACS capabilities for TR-069 devices.







#### **LEDs**

Power Wi-Fi Ethernet link ADSL Internet VolP USB link

#### **Buttons**

1 x Power Button 1 x Reset Button

#### **Power Adapter**

INPUT: 230Vac 50 Hz OUTPUT: 15Vdc 1.2 A

### **Environmental Specifications**

- Temperature:
   Operating: 0 to 40 °C
- Non Operating: -20 to 65 °C Relative Humidity:
- Operating: 10% to 90% non-condensing
- Non Operating:5% to 95% non-condensing

#### **Agency Approvals and** Certifications

CE mark ITU-T K21\* Wi-Fi certification (by Wi-Fi alliance) RoHS WEEE

## **Physical Specifications**

210 x 37 x 220 mm

#### **Standard Package Content**

DRG A226G Power adapter N°1 Ethernet CAT5 cable RJ-45 plug (Yellow) N°1 USB cable (Blue) N°1 Phone cable RJ-11 plug (ADSL) (Gray) CD Safety leaflet

(\*): optional on request

# **Discus**<sup>TM</sup> **DRG A226G**

**MAIN FEATURES** 

| WAN interface  1 ADSL (Jap 21, 1992 2, 1143, G994.1, 997.1)  ADSL (26, 992.3)  Wireless Interface  Wireless Interface  Wireless Interface  Wireless Dott (10)  Wireless Interface  Wireless Dott (10)  Wireless Interface  Wireless Dott (10)  Wireless Dott (10)  Wireless (10)  ATM (10)  Wireless (10)  DSL (ATM)  ASL (TIUT. 130)  ASL (GTUT. 130)  DSL (ATM)  ASL (GTUT. 130)  ASL (GTUT. 130)  DSL (ATM)  ASL (GTUT. 130)  ASL (GTUT. 130)  ASL (GTUT. 130)  DSL (ATM)  Multiple (Pyper Connections Multiple (Pyper) Connections on a single VC  WAN Protocol  Encapsulation  Encap | MAIN FEATURES            |                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------------|
| - ADSL2 (G.992.3)     - ADSL2 (G.992.5)      | WAN interface            | 1 ADSL Line port (RJ-11plug) supporting the following standards: |
| * ADSL2+ (G992.5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |                                                                  |
| LAN interface  LAN interface  LAN interface  N° 4 10/10/08/SE-T Etherse ports (RL4-5 plug), compilant IEEE 80.2, with auto MDIX and auto-negotation. Ports can be configured in order to be dedicated to video traffic tofrom a STB N°1 USB host v.2.0, N°1 USB Device v1.1  Wireless Interface  Wireless Interface  Wireless point with N°2 external antennas compliant with: - IEEE 802.11big - WPAN/PBAZ (IEEE 802.11t) - WMM (IEEE 802.11b) - WMM (IEEE 802.11t) - FA FE - Loop-back Encapsulation modes in ATM stack: LLC SNAP and VC-Mux Bridged/Routed Ethernet over ATM (RFC 2884 / RFC 1483) - PPP over Ethernet (RFC 2364) - PPP over ATM (RFC |                          | 1                                                                |
| LAN interface  N° 4 10/1008ASE-T Ethernet ports (RJ-45 plug), compliant IEEE 802.3, with auto MDIX and auto-negotiation. Ports can be configured in order to be dedicated to video traffic to/form a STB N°1 USB Host v.2.0, N°1 USB Device v1.1  Wireless Interface WiFi access point with N°2 external antennas compliant with: IEEE 802.1 thlg - WPA/WPA2 (IEEE 802.1 thlg  |                          |                                                                  |
| 802.3, with auto MDIX and auto-negotiation. Ports can be configured in order to be dedicated to video traffic tofrom a STB N*1 USB Host v2.0, N*1 USB Device v1.1  Wireless Interface WiFi access point with N*2 external antennas compliant with: - IEEE 802.1 fb/g - WPAN/PAZ (IEEE 802.11) - WMM (IEEE 802.11b) - WMM (IEEE 802.11e)  DSL (ATM) features  Multiple VCR2 (IEEE 802.11e)  ALIS (ITU-I 1.363.5) UBR, VBR-nrt, VBR-rt, CBR traffic classes Multiple VCR/PP connections Multip-protocol encapsulation over AAL5, RFCs 2684 Up to 8 PVC Pre-emptive SAR Multiple physical queues (up to 8) per traffic class, with priority-based scheduling support* OAM (ITU-T I.610) - F4, F5 - Loop-back Encapsulation modes in ATM stack: LLC SNAP and VC-Mux Bridged/Routed Ethernet over ATM (RFC 2684 / RFC 1483) PPP over Ethernet (RFC 2364) PPP over ATM (RFC 2364) PPP over ATM (RFC 2364) PPP over ATM (RFC 2364) PP over ATM (RFC 2364) PPP over ATM (RFC 2364) PPP over ATM (RFC 2364) PPP over ATM (RFC 364) PP | L AND Indeed on the con- |                                                                  |
| Ports can be configured in order to be dedicated to video traffic forform a STB N°1 USB Host v.2.0, N°1 USB Device v1.1  WiFel access point with N°2 external antennas compliant with: - IEEE 802.11big - WPA/WPA2 (IEEE 802.11b) - WAMM (IEEE 802.11b) - WAME (IEEE 802.11b) - WAME (IEEE 802.11b) - WAME (IEEE 802.11c) - WAME (ITU-T 1.363.5) - UBR, VBR-RIT, VBR-rt, CBR traffic classes - Multiple pytoical queues (up to 8) per traffic class, with priority-based scheduling support* - OAM (ITU-T 1.61d) - F4, F5 - Loop-back - Encapsulation modes in ATM stack: LLC SNAP and VC-Mux - WAN Protocol - Encapsulation modes in ATM stack: LLC SNAP and VC-Mux - Bridged/Routed Ethernet over ATM (RFC 2684 / RFC 1483) - PPP over Ethernet (RFC 2516) - PPP over Ethernet (RFC 2516) - PPP over ATM (RFC 2384) - PPO over ATM (RFC 1877) - Multiple PPPoE connections on a single VC - Reversity of the stack o | LAN interface            |                                                                  |
| Wireless Interface Wireless Spannt with N°2 external antennas compliant with: - IEEE 802.11b) - WMM (IEEE 802.11e) - WIRELES WIRELES WIRELES WIRELES WALLS, RFCs 2684 Up to 8 PVC Pre-emptive SAR Multiple physical queues (up to 8) per traffic class, with priority-based scheduling support*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                          |                                                                  |
| Wireless Interface  Wirelacess point with N*2 external antennas compliant with: - IEEE 802.11b/g - WPAWPA2 (IEEE 802.11i) - WMM (IEEE 802.11e)  AAL5 (ITU-T.1363.5) UBR, VBR-nt, VBR-nt, CBR traffic classes Multiple CVC/PPP connections Multi-protocol encapsulation over AAL5, RFCs 2684 Up to 8 PVC Pre-emptive SAR Multiple physical queues (up to 8) per traffic class, with priority-based scheduling support* OAM (ITU-T.1610) - F4, F5 - Loop-back Encapsulation  WAN Protocol Encapsulation  Bridget/Routed Ethernet over ATM (RFC 2684 / RFC 1483) PPP over Ethernet (RFC 2516) PPP over ATM (RFC 2584) IP over ATM (RFC 2684) IF |                          |                                                                  |
| - IEEE 802.11bj - WPAWPA2 (IEEE 802.11i) - WMM (IEEE 802.11e)  ALLS (ITU-TI.363.5) UBR, VBR-nt, VBR-rt, CBR traffic classes Multiple VC/PPP connections Multi-protocol encapsulation over AAL5, RFCs 2684 Up to 8 PVC Pre-emptive SAR Multiple physical queues (up to 8) per traffic class, with priority-based scheduling support* OAM (ITU-TI.610) - F4, F5 - Loop-back Encapsulation modes in ATM stack: LLC SNAP and VC-Mux  WAN Protocol Encapsulation Bridged/Routed Ethernet over ATM (RFC 2684 / RFC 1483) PPP over ATM (RFC 2516) PPP over ATM (RFC 2517) Multiple PPPOE connections on a single VC Routing / Bridging Riving Rin |                          | N°1 USB Host v.2.0, N°1 USB Device v1.1                          |
| - IEEE 802.11b/g - WPAWPAP2 (IEEE 802.11e) - WMM (IEEE 802.11e) - WRA (ITU-TI.363.5) - UBR, VBR-nrt, VBR-rt, CBR traffic classes Multiple VC/PPP connections Multiple rottocol encapsulation over AAL5, RFCs 2684 - Up to 8 PVC - Pre-emptive SAR - Multiple physical queues (up to 8) per traffic class, with priority-based scheduling support* - OAM (ITU-TI.610) - F4, F5 - Loop-back - Encapsulation - Bridgeding - Bridgeding - Bridgeding - Bridgeding - Bridgeding - Routing / Bridgeding - RIP v1/N2 and static routing - NAT/NAPT, RFCs 3022, Static NAT/NAPT - DHCP Server/Client/Relay - DNS relay - VPN pass-through - IPv4 - Application Level Gateway (ALGs) modules - Spanning tree protocol - IP Milticasting - IGMP v2, v3 - Transparent Bridging (IEEE802.1d) - Traffic shapping (ATM layer) - Priority-based scheduling (up to 8* queues, max 4 per PVC ) - 802.1P/Q prioritization - Diffser (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname - Port based QoS - DSCP/TOS remarking - VolP - Codecs: G711 al-lawly-law, G.729*, G.726*, G.723* - Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) - Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO - Phone port (RJ11 Plug) - Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP - payload for DTMF digits RFC 2833 - Volp QoS: - Layer 3 QoS; control ToS and DSCP for VolP RTP - Prioritization of voice over data at the network stack - Programmable firewall, Stateful Packet inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control - Status and performance monitoring - FTP/TFTP client for remote firmware upgrade - Diagnostics and LOGS - Telnet with CLI - WEB server with Admin/User configuration Pages - VLAN - V | Wireless Interface       | Wi-Fi access point with N°2 external antennas compliant with:    |
| - WMM (IEEE 802.11e)  DSL (ATM) features  MAL5 (ITU-T 1.363.5) UBR, VSR-nrt, VBR-rt, CBR traffic classes Multiple VC/PPP connections Multi-protocol encapsulation over AAL5, RFCs 2684 Up to 8 PVC Pre-emptive SAR Multiple physical queues (up to 8) per traffic class, with priority-based scheduling support* OAM (ITU-T 1.610) - F4, F5 - Loop-back Encapsulation Bridgaing  WAN Protocol Encapsulation Bridgaing  Routing / Bridging  Routing / Bridging  Rip vifv 2 and static routing NAT/NAPT, RFC 2384) IP over ATM (RFC 2516) PPP over ATM (RFC 2570) Multiple PPPoE connections on a single VC  Rip vifv 2 and static routing NAT/NAPT, RFCs 3022, Static NAT/NAPT DHCP Server/Client/Relay DNS relay VPN pass-through IPv4 Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d)  Traffic shapping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC ) 802.1P/Q prioritization Diffser (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VoIP  Codecs (C711 a-lawl)-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: - Layer 3 QoS: control ToS and DSCP for VoIP RTP - Prioritization of voice over data at the network stack Programmable firewall, Stateful Packet inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOOS Telnet with CLI WEB server with Admin/User configuration Pages                                                                                                                                                                                                                                                                         |                          | - IEEE 802.11b/g                                                 |
| DSL (ATM)   features                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                          | - WPA/WPA2 (IEEE 802.11i)                                        |
| Beatures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          | , ,                                                              |
| features  Multiple (V/PPP connections Multi-protocol encapsulation over AAL5, RFCs 2684 Up to 8 PVC  Pre-emptive SAR Multiple physical queues (up to 8) per traffic class, with priority-based scheduling support* OAM (ITU-T I.610)  - F4, F5 - Loop-back Encapsulation modes in ATM stack: LLC SNAP and VC-Mux BridgefRouted Ethernet over ATM (RFC 2684 / RFC 1483) PPP over ATM (RFC 2364) PPP over ATM (RFC 2364) PP over ATM (RFC 2364) PO ever ATM (RFC 2364) PO eve | DSL (ATM)                | ,                                                                |
| Multiprotocol encapsulation over AAL5, RFCs 2684 Up to 8 PVC Pre-emptive SAR Multiple physical queues (up to 8) per traffic class, with priority-based scheduling support* OAM (ITU-T I.610) - F4, F5 - Loop-back Encapsulation modes in ATM stack: LLC SNAP and VC-Mux  WAN Protocol Encapsulation Bridged/Routed Ethernet over ATM (RFC 2684 / RFC 1483) PPP over Ethernet (RFC 2516) PPP over ATM (RFC 2364) IP over ATM (RFC 1577) Multiple PPPoE connections on a single VC Routing / RP v1v/2 and static routing NAT/NAPT, RFCs 3022, Static NAT/NAPT DHCP Server/Client/Relay DNS relay VPN pass-through IPv4 Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting - IGMP v2, v3 Transparent Bridging (IEEE802.1d) Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VolP Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) voice interface: N°2 FXS Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VolP Qos: Layer 3 QoS: control ToS and DSCP for VolP RTP - Prioritization of voice over data at the network stack Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control  Management  Management Software/firmware image management Protocol: - Auto- configuration and dynamic service provisioning - Software/firmware image management - Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGS Telnet with CLI WEB server with Admin/User configuration Pages                                                                                                                                                                                                                                                            |                          |                                                                  |
| Up to 8 PVC Pre-emptive SAR Multiple physical queues (up to 8) per traffic class, with priority-based scheduling support* OAM (ITU-T L610) - F4, F5 - Loop-back Encapsulation modes in ATM stack: LLC SNAP and VC-Mux Bridged/Routed Ethernet over ATM (RFC 2684 / RFC 1483) PPO over Ethernet (RFC 2516) PPO over ATM (RFC 2364) IP over ATM (RFC 1577) Multiple PPPOE connections on a single VC Routing / Bridging IR v1/v2 and static routing NAT/NAPT, RFCs 3022, Static NAT/NAPT DHCP Server/Client/Relay DNS relay VPN pass-through IPv4 Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d) Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking Volp Codecs: G.711 a-lawlp-law, G.729*, G.726*, G.723* Volp stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VolP QoS: -Layer 3 QoS: control ToS and DSCP for VolP RTP - Prioritization of voice over data at the network stack Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control  Management  Management  Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGS Telnet with CLI WEB server with Admin/User configuration Pages                                                                                                                                                                                                                                                                                                                                                                                                                                           | 104141.00                |                                                                  |
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| Multiple physical queues (up to 8) per traffic class, with priority-based scheduling support* OAM (ITU-T1.610) - F4, F5 - Loop-back Encapsulation modes in ATM stack: LLC SNAP and VC-Mux Bridged/Routed Ethernet over ATM (RFC 2684 / RFC 1483) PPP over Ethernet (RFC 2516) PPP over ATM (RFC 2364) PPP over ATM (RFC 2364) PPP over ATM (RFC 2364) PPP over ATM (RFC 1577) Multiple PPPOE connections on a single VC Routing / Bridging Riviva and static routing NAT/NAPT, RFCs 3022, Static NAT/NAPT DHCP Server/Client/Relay DNS relay VPN pass-through PV4 Application Level Gateway (ALGs) modules Spanning tree protocol PM Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d) Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VoIP Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: -Layer 3 QoS: control ToS and DSCP for VolP RTP - Priority: Total Procological at the network stack Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control SE Forum TR-609 CPE Management Protocol: - Auto-configuration and dynamic service provisioning - Software/firmware image management Protocol: - Auto-configuration and dynamic service provisioning - Software/firmware image management Protocol: - Auto-configuration and dynamic service provisioning - Software/firmware image management - Status and performance monitoring - FTP/TFTP client for remote firmware upgrade - Diagnostics and LOGS - Telnet with CLI - WEB server with Admin/User configuration Pages                                                                                              |                          | · ·                                                              |
| priority-based scheduling support* OAM (ITU-T I.610) - F4, F5 - Loop-back Encapsulation Bridged/Routed Ethernet over ATM (RFC 2684 / RFC 1483) PPP over Ethernet (RFC 2364) IP over ATM (RFC 1577) Multiple PPPo ever ATM (RFC 1577) Multiple PPPo ever ATM (RFC 1577) Multiple PPPo ever ATM (RFC 1577) Multiple PPPo Econnections on a single VC Routing / Bridging  Rip vir/2 and static routing NAT/NAPT, RFCs 3022, Static NAT/NAPT DHCP Server/Client/Relay DNS relay VPN pass-through IPv4 Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d) Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VolP Codecs (G-111 - alaw/µ-law, G-729*, G-726*, G-723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N*2 FXS Phone port (RJ11 Plug), N*1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VolP Qos: - Layer 3 QoS; control ToS and DSCP for VolP RTP - Prioritization of voice over data at the network stack  Security Management  Management  Management Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN  Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |                                                                  |
| OAM (TU-T I.610) - F4, F5 - Loop-back Encapsulation modes in ATM stack: LLC SNAP and VC-Mux Bridged/Routed Ethernet over ATM (RFC 2684 / RFC 1483) PPP over Ethernet (RFC 2516) PPP over Ethernet (RFC 2516) PPP over ATM (RFC 2364) IP over ATM (RFC 1577) Multiple PPPOE connections on a single VC ROUTING RIP YI/V2 and static routing NAT/NAPT, RFCS 3022, Static NAT/NAPT DHCP Server/Client/Relay DNS relay VPN pass-through IPV4 Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting – IGMP V2, V3 Transparent Bridging (IEEE802.1d) Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC ) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VoIP Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: -Layer 3 QoS: control ToS and DSCP for VolP RTP -Prioritization of voice over data at the network stack Security  Management  Management  DSL Forum TR-069 CPE Management Protocol: - Auto-configuration and dynamic service provisioning - Software/firmware image management - Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN  Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                          |                                                                  |
| WAN Protocol Encapsulation  WAN Protocol Encapsulation  Bridged/Routed Ethernet over ATM (RFC 2684 / RFC 1483) PPP over Ethernet (RFC 2516) PPP over ATM (RFC 2364) IP over ATM (RFC 2364) IP over ATM (RFC 1577) Multiple PPPDE connections on a single VC  Routing / Bridging  Riv 1/v2 and static routing NAT/NAPT, RFCs 3022, Static NAT/NAPT DHCP Server/Client/Relay DNS relay VPN pass-through IPv4 Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d)  Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC) 802.1P/Q prioritization Diffser (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VoIP  Codecs: G.711 a-lawlµ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: -Layer 3 QoS: control ToS and DSCP for VoIP RTP -Prioritization of voice over data at the network stack Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control  Security  Management  Management  Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                          | ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '                            |
| Hand Protocol Encapsulation  WAN Protocol Encapsulation  Bridged/Routed Ethernet over ATM (RFC 2684 / RFC 1483) PPP over Ethernet (RFC 2516) PPP over ATM (RFC 2364) IP over ATM (RFC 2364) IP over ATM (RFC 2364) IP over ATM (RFC 1577) Multiple PPPoE connections on a single VC  Routing / Bridging  Routing / Bridging  Routing / Bridging  NaT/NAPT, RFCS 3022, Static NAT/NAPT DHCP Server/Client/Relay DNS relay VPN pass-through IPv4 Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting − IGMP v2, v3 Transparent Bridging (IEEE802.1d)  Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC ) 802.1P/Q prioritization Diffser (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VoIP  Codecs: G.711 a-law/μ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP Qos: Layer 3 QoS: control ToS and DSCP for VoIP RTP Prioritization of voice over data at the network stack Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control DSL Forum TR-069 CPE Management Protocol: Auto-configuration and dynamic service provisioning Software/firmware image management Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                          |                                                                  |
| ## WAN Protocol Encapsulation  Bridged/Routed Ethernet over ATM (RFC 2684 / RFC 1483) PPP over Ethernet (RFC 2516) PPP over ATM (RFC 2564) PPP over ATM (RFC 2564) PPP over ATM (RFC 2577) Multiple PPPD connections on a single VC  Routing / RIP 1/1/2 and static routing NAT/NAPT, RFCs 3022, Static NAT/NAPT DHCP Server/Client/Relay DNS relay VPN pass-through IPv4 Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d)  **Tarffic shaping (ATM layer)**Priority-based scheduling (up to 8* queues, max 4 per PVC ) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  **VolP**  Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N*2 FXS Phone port (RJ11 Plug), N*1 FXO Phone port (RJ11 Plug)  Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VolP QoS: -Layer 3 QoS: control ToS and DSCP for VolP RTP - Prioritization of voice over data at the network stack  **Security**Protocol filtering, Access Control, Parental control DSL Forum TR-069 CPE Management Protocol: - Auto-configuration and dynamic service provisioning - Software/firmware image management Protocol: - Auto-configuration and dynamic service provisioning - FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |                                                                  |
| Encapsulation  PPP over Ethernet (RFC 2516) PPP over ATM (RFC 2364) PPP over ATM (RFC 2364) PP over ATM (RFC 2577) Multiple PPPDE connections on a single VC  Routing / Bridging  Routing / Bridging  AT/NAPT, RFCs 3022, Static NAT/NAPT DHCP Server/Client/Relay DNS relay VPN pass-through PP4 Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d)  Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VolP  Volp Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VolP QoS: -Layer 3 QoS: control ToS and DSCP for VolP RTP -Prioritization of voice over data at the network stack Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control DSL Forum TR-069 CPE Management Protocol: -Valvo-configuration and dynamic service provisioning - Software/firmware image management - Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN  VLAN  VLAN  VLAN  Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          | Encapsulation modes in ATM stack: LLC SNAP and VC-Mux            |
| Encapsulation  PPP over Ethernet (RFC 2516) PPP over ATM (RFC 2364) IP over ATM (RFC 2364) IP over ATM (RFC 1577) Multiple PPDE connections on a single VC  RIP v1/2 and static routing VAT/NAPT, RFCs 3022, Static NAT/NAPT DHCP Server/Client/Relay DNS relay VPN pass-through IPv4 Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d)  QOS Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC ) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VOIP  Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: -Layer 3 QoS: control ToS and DSCP for VoIP RTP -Prioritization of voice over data at the network stack Porgammable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control DSL Forum TR-069 CPE Management Protocol: -Valve - Configuration and dynamic service provisioning - Software/firmware image management - Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN  VLAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | WAN Protocol             | Bridged/Routed Ethernet over ATM (RFC 2684 / RFC 1483)           |
| PPP Over ATM (RFC 1577)   Multiple PPPOE connections on a single VC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                          | PPP over Ethernet (RFC 2516)                                     |
| Routing / Bridging RIP v1/v2 and static routing NAT/NAPT, RFCs 3022, Static NAT/NAPT DHCP Server/Client/Relay Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d)  QOS Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VOIP Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: Layer 3 QoS: control ToS and DSCP for VoIP RTP Prioritization of voice over data at the network stack Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control  Management Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Elicapsulation           | PPP over ATM (RFC 2364)                                          |
| Routing / Bridging  RIP v1/v2 and static routing NAT/NAPT, RFCs 3022, Static NAT/NAPT DHCP Server/Client/Relay DNS relay VPN pass-through IPv4 Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d)  QoS Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC ) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VoIP Codecs: G.711 a-lawlµ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N*2 FXS Phone port (RJ11 Plug), N*1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: -Layer 3 QoS: control ToS and DSCP for VoIP RTP +Prioritization of voice over data at the network stack  Security Management  Management  Management Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          | , ,                                                              |
| Prioritization of voice over data at the network stack  Security  Management  Management  Management  Management  Management  Nat/NAPT, RFCs 3022, Static NAT/NAPT DHCP Server/Client/Relay DNS relay DNS relay VPN pass-through IPv4 Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d)  Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VolP  Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N*2 FXS Phone port (RJ11 Plug), N*1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VolP QoS: -Layer 3 QoS: control ToS and DSCP for VolP RTP -Prioritization of voice over data at the network stack  Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control DSL Forum TR-089 CPE Management Protocol: - Auto- configuration and dynamic service provisioning - Software/firmware image management - Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                          | i v                                                              |
| DHCP Server/Client/Relay DNS relay VPN pass-through IPv4 Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d)  QoS Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC ) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VoIP  Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: -Layer 3 QoS: control ToS and DSCP for VoIP RTP -Prioritization of voice over data at the network stack  Security  Management  Management  Management  Management  Management  Software/firmware image management Protocol: - Auto- configuration and dynamic service provisioning - Software/firmware image management - Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN  Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Routing /                |                                                                  |
| DNS relay VPN pass-through IPv4 Application Level Gateway (ALGs) modules Spanning free protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d)  Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC ) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VolP Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VolP QoS: -Layer 3 QoS: control ToS and DSCP for VolP RTP -Prioritization of voice over data at the network stack  Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control DSL Forum TR-069 CPE Management Protocol: - Auto- configuration and dynamic service provisioning - Software/firmware image management - Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                          |                                                                  |
| VPN pass-through IPv4 Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d)  Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC ) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VoIP Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: -layer 3 QoS: control ToS and DSCP for VoIP RTP -Prioritization of voice over data at the network stack Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control DSL Forum TR-069 CPE Management Protocol: - Auto- configuration and dynamic service provisioning - Software/firmware image management - Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Dilaging                 | ,                                                                |
| IPv4 Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d)  Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VoIP Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: -Layer 3 QoS: control ToS and DSCP for VoIP RTP -Prioritization of voice over data at the network stack Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control  Management  Management Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                          |                                                                  |
| Application Level Gateway (ALGs) modules Spanning tree protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d)  Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC ) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VoIP Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: -Layer 3 QoS: control ToS and DSCP for VoIP RTP -Prioritization of voice over data at the network stack  Security Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control  Management  Management Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |                                                                  |
| Spanning tree protocol IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d)  Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC ) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VoIP Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N*2 FXS Phone port (RJ11 Plug), N*1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: Layer 3 QoS: control ToS and DSCP for VoIP RTP +Prioritization of voice over data at the network stack  Security Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control  Management Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                          |                                                                  |
| IP Multicasting – IGMP v2, v3 Transparent Bridging (IEEE802.1d)  Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC ) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VoIP  Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: -Layer 3 QoS: control ToS and DSCP for VoIP RTP -Prioritization of voice over data at the network stack  Security  Management  Management  Setus and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |                                                                  |
| Transparent Bridging (IEEE802.1d)  Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC ) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VoIP  Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N*2 FXS Phone port (RJ11 Plug), N*1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP Qos: -Layer 3 QoS: control ToS and DSCP for VoIP RTP -Prioritization of voice over data at the network stack  Security  Management  Management  Management  DSL Forum TR-069 CPE Management Protocol: -Auto-configuration and dynamic service provisioning - Software/firmware image management - Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN  Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                          |                                                                  |
| Traffic shaping (ATM layer) Priority-based scheduling (up to 8* queues, max 4 per PVC ) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based Qos DSCP/TOS remarking  VoIP Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: Layer 3 QoS: control ToS and DSCP for VoIP RTP Prioritization of voice over data at the network stack Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control DSL Forum TR-069 CPE Management Protocol: Auto- configuration and dynamic service provisioning Software/firmware image management Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          | I =                                                              |
| Priority-based scheduling (up to 8* queues, max 4 per PVC ) 802.1P/Q prioritization Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname Port based QoS DSCP/TOS remarking  VoIP Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: Layer 3 QoS: control ToS and DSCP for VoIP RTP Prioritization of voice over data at the network stack  Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control  Management DSL Forum TR-069 CPE Management Protocol: Auto- configuration and dynamic service provisioning Software/firmware image management Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 200                      | ,                                                                |
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| VoIP  Codecs: G.711 a-law/µ-law, G.729*, G.726*, G.723* Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug)  Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: •Layer 3 QoS: control ToS and DSCP for VoIP RTP •Prioritization of voice over data at the network stack  Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control  DSL Forum TR-069 CPE Management Protocol: • Auto- configuration and dynamic service provisioning • Software/firmware image management • Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN  Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          | Port based QoS                                                   |
| Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug) Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: •Layer 3 QoS: control ToS and DSCP for VoIP RTP •Prioritization of voice over data at the network stack  Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control  Management  Management  DSL Forum TR-069 CPE Management Protocol: • Auto- configuration and dynamic service provisioning • Software/firmware image management • Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN  Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                          |                                                                  |
| Voip stacks supported: SIP2.0, MGCP (option), H.323 (option) Voice interface: N°2 FXS Phone port (RJ11 Plug), N°1 FXO Phone port (RJ11 Plug)  Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VoIP QoS: •Layer 3 QoS: control ToS and DSCP for VoIP RTP •Prioritization of voice over data at the network stack  Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control  DSL Forum TR-069 CPE Management Protocol: • Auto- configuration and dynamic service provisioning • Software/firmware image management • Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN  Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | VoIP                     |                                                                  |
| Phone port (RJ11 Plug)  Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833  VolP QoS:  -Layer 3 QoS: control ToS and DSCP for VolP RTP -Prioritization of voice over data at the network stack  Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control  DSL Forum TR-069 CPE Management Protocol: - Auto- configuration and dynamic service provisioning - Software/firmware image management - Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN  Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |                                                                  |
| Codecs Control: RTP/RTCP RFC 1889, SDP RFC 2327, RTP payload for DTMF digits RFC 2833 VolP QoS:  Layer 3 QoS: control ToS and DSCP for VolP RTP Prioritization of voice over data at the network stack Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control  Management  DSL Forum TR-069 CPE Management Protocol: Auto- configuration and dynamic service provisioning Software/firmware image management Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                          |                                                                  |
| payload for DTMF digits RFC 2833  VoIP QoS:  -t.ayer 3 QoS: control ToS and DSCP for VoIP RTP -Prioritization of voice over data at the network stack  Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control  DSL Forum TR-069 CPE Management Protocol: - Auto- configuration and dynamic service provisioning - Software/firmware image management - Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                          | · ` ` •                                                          |
| VoiP QoS:  •Layer 3 QoS: control ToS and DSCP for VoIP RTP •Prioritization of voice over data at the network stack  Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control  DSL Forum TR-069 CPE Management Protocol: • Auto- configuration and dynamic service provisioning • Software/firmware image management • Status and performance monitoring  FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN  Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                          |                                                                  |
| Layer 3 QoS: control ToS and DSCP for VoIP RTP     Prioritization of voice over data at the network stack      Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control      Management      DSL Forum TR-069 CPE Management Protocol:          Auto- configuration and dynamic service provisioning          Software/firmware image management          Status and performance monitoring          FTP/TFTP client for remote firmware upgrade          Diagnostics and LOGs          Telnet with CLI          WEB server with Admin/User configuration Pages  VLAN      Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          | 1 ' '                                                            |
| Programmable firewall, Stateful Packet Inspection (SPI) Firewall IP protocol filtering, Access Control, Parental control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          | Layer 3 QoS: control ToS and DSCP for VoIP RTP                   |
| IP protocol filtering, Access Control, Parental control  Management  DSL Forum TR-069 CPE Management Protocol: • Auto- configuration and dynamic service provisioning • Software/firmware image management • Status and performance monitoring FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN  Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |                                                                  |
| Management  DSL Forum TR-069 CPE Management Protocol:  • Auto- configuration and dynamic service provisioning  • Software/firmware image management  • Status and performance monitoring  FTP/TFTP client for remote firmware upgrade  Diagnostics and LOGs  Telnet with CLI  WEB server with Admin/User configuration Pages  VLAN  Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Security                 | . , ,                                                            |
| Auto- configuration and dynamic service provisioning     Software/firmware image management     Status and performance monitoring     FTP/TFTP client for remote firmware upgrade     Diagnostics and LOGs     Telnet with CLI     WEB server with Admin/User configuration Pages  VLAN     Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          | ·                                                                |
| Software/firmware image management     Status and performance monitoring     FTP/TFTP client for remote firmware upgrade     Diagnostics and LOGs     Telnet with CLI     WEB server with Admin/User configuration Pages  VLAN     Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Management               |                                                                  |
| Status and performance monitoring     FTP/TFTP client for remote firmware upgrade     Diagnostics and LOGs     Telnet with CLI     WEB server with Admin/User configuration Pages  VLAN     Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _                        |                                                                  |
| FTP/TFTP client for remote firmware upgrade Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |                                                                  |
| Diagnostics and LOGs Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |                                                                  |
| Telnet with CLI WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          | , 9                                                              |
| WEB server with Admin/User configuration Pages  VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |                                                                  |
| VLAN Supports multiple VLAN ID per ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |                                                                  |
| Configurable layer-two switching                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | VLAN                     |                                                                  |
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